



Historic New Castle, Delaware

Waterfront Access Preliminary Engineering and Permitting Phase

submitted to:

City of New Castle, Delaware

submitted by:



**DUFFIELD
ASSOCIATES**

February 4, 2013



Duffield Associates, Inc.
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February 4, 2013

City of New Castle
Attn: Cathryn Thomas
City Administrator
220 Delaware Street
New Castle, DE 19720

RE: RFP - Historic New Castle, DE Waterfront Access,
Preliminary Engineering & Permitting Phase

Dear Mrs. Thomas,

Duffield Associates appreciates this opportunity to present this proposal for preliminary engineering and permitting services for the waterfront access project for the City of New Castle, Delaware. We offer extensive experience with local permits and approvals, coupled with extensive waterfront project experience in the State of Delaware and beyond. Our recent experience includes the Lightship Overfalls Berth in the City of Lewes, the Delaware City Marina Bank Stabilization, the Summit North Marina in Bear, the Marine Lubricants emergency wharf reconstruction project in Wilmington and various projects for the Port of Wilmington. Duffield was retained by the City of New Castle to prepare a master plan and concept design for this important waterfront project. Our team is already familiar with the unique challenges of this project, in addition to having extensive experience with local permits and approvals for this waterfront redevelopment project. Our proposed team has a proven track record at working with the Historic New Castle Alliance, the New Castle Planning Commission and the New Castle City Council to get results.

Duffield Associates is an award-winning marine, geoscience, civil engineering and environmental consulting firm that was established in 1976 and has grown to include a professional and technical staff of approximately 95 individuals. The firm's headquarters are located in a historic barn and farmhouse in Pike Creek Valley outside of Wilmington, Delaware and our downstate office is located in the heart of historic Georgetown. These offices are supplemented by locations in Philadelphia, PA, Carlisle, PA, Cape May Court House, NJ and our Havre De Grace, MD office located just outside of the City of Baltimore.

We approach our projects as a collaborative team effort and expect to support the City Administrator and staff on this project as we have on prior projects performed for the City of New Castle. We are prepared to commit the appropriate mix of professional and technical specialists for this assignment, pursuant to your concurrence.

The Duffield Associates' team brings the following strengths to complement your project team on this initiative:

- Effective project leadership, familiar with you and the appropriate regulatory agencies;
- An experienced project manager with intimate knowledge of New Castle City's objectives, policies, and procedures;
- Technical and project management staff with first hand knowledge of the local permits and approvals;
- Proven expertise and success in developing similar waterfront projects, managing complex environmental issues, and designing similar marine structures;
- Proven record of meeting project schedules, milestones and budgets for similar projects.



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Letter of Transmittal

Company Profile

Project Understanding
and Scope

Team, Organization and
Resumes

References

Additional Information

Required Information



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Duffield Associates is proud of our record of performance for our clients. We would appreciate the opportunity to further discuss our qualifications, as well as to discuss your project needs and our ability to meet those needs. As you are aware, Duffield Associates has worked on many successful and significant projects with New Castle County over the years. We would appreciate the opportunity to bring our expertise to this project. Because our staff live or work in New Castle County, your selection of Duffield Associates would serve New Castle County's interests by reinvesting in our community.

We place considerable emphasis on integrity and on providing value to the clients we are privileged to serve. Our team strives to provide exceptional service, strong communication and adherence to budget and time constraints. Duffield Associates is proud of our "can do" approach and will demonstrate that commitment if we are selected for this project. We encourage you to contact our team's client references included with this submittal.

We are pleased to submit this letter of interest and accompanying qualifications statement and proposal to assist the City of New Castle in successfully completing this important project. The enclosed qualifications statement and proposal addresses the requested items contained in the RFP and describes our experience and qualifications for this project.

Thank you for this opportunity to present our qualifications. Please call us if you would like to discuss any part of this proposal prior to making a decision or if you have any questions concerning the enclosed information.

Very truly yours,

DUFFIELD ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read 'John G. Fellows'.

John G. Fellows, R.L.A., LEED AP
Project Manager/Senior Consultant

A handwritten signature in black ink, appearing to read 'Jeffrey M. Bross'.

Jeffrey M. Bross, P.E., LEED AP, FACEC
Principal in Charge



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PANY PROFILE

Firm Name: Duffield Associates, Inc.
Organizational Structure: Corporation
Year Established: 1976
Address: 5400 Limestone Road
Wilmington, DE 19808
Phone: 302-239-6634
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Primary Liaison for this RFP:

John G. Fellows, R.L.A., LEED AP
Senior Consultant
Phone: 302-239-6634
Fax: 302-239-8485
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Authorized Representative for Contract:

Jeffrey M. Bross, P.E., LEED AP
Chairman, Principal- in- charge
Phone: 302-239-8485
Fax: 215-875-7356
Email: jbross@duffnet.com

Duffield Associates, Inc.

Duffield Associates, an award-winning geoscience and environmental consulting firm, was established in 1976 and has grown to include a professional and technical staff of approximately 95 individuals. The firm's headquarters are located in a historic barn and farmhouse in Pike Creek Valley outside of Wilmington, Delaware and our downstate Delaware office is located in the heart of historic Georgetown. Our Pennsylvania Offices are located in Philadelphia, PA and Carlisle, PA. These Offices are supplemented by our Cape May Court House, New Jersey Office and our Havre De Grace, Maryland Office located just outside of the City of Baltimore.

Duffield Associates practices extensively in the areas of:

- Water and Natural Resources
- Civil Engineering
- Geotechnical Engineering
- Environmental Services
- Coastal/Waterfront Engineering
- Structural Engineering
- Construction Services
- Geographic Information Systems



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P.E., LEED AP will be the Principal-in-charge for this a Senior Consultant and has been recognized as 5. He has extensive experience for coastal engineering projects, civil engineering projects and obtaining permits for a variety of difficult and challenging engineering projects. His recent experience includes Principal- in- charge for the waterfront redevelopment concept plan for the City of New Castle. This gives our team an understanding of the unique challenges of this project. Represented on staff are Civil Engineers, Environmental Engineers, Environmental Scientists, Geotechnical Engineers, Construction Engineers, Structural Engineers, Coastal and Hydraulic Engineers and Scientists, Geologists, Hydrogeologists, and a technical support staff.

Our firm has a pool of over 25 professional engineers and geologists to draw from, all located in nearby Wilmington, DE to staff this important project. The team has extensive experience with all of the regions regulatory requirements and permit approvals. This is coupled with previous experience on the master plan for this project gives our team a familiarity with the specific challenges for this waterfront project. Our experienced team is prepared to revisit the master plan as prepared by this firm to confirm the program requirements.

Duffield Associates also has an AASHTO and USACE accredited soils and concrete testing laboratory and contemporary specialized field sampling and testing equipment.

The firm has undertaken over 10,000 projects for more than 2,000 different clients including government, industry, construction, and professional clients. Duffield Associates is the largest consulting engineering firm based in the State of Delaware. We offer an unparalleled knowledge of regulations and permitting requirements in this region.

DEDC Consulting Engineers

For Mechanical/ Electrical/ Plumbing Engineering, we will team with DEDC Consulting Engineers of Newark, DE. Established in 1965, DEDC is a full service multi- disciplined engineering and design firm. They offer in- house expertise in HVAC, electrical and plumbing engineering services. They have the desired experience in lighting design for waterfront projects as stipulated in the RFP, including previous waterfront work with Duffield Associates. DEDC's practice is built upon the quality of the staff, the strength of their relationships and a diverse resume of engineering design experience.

Homsey Architects, Inc.

For the Architectural portion of the work, we will team with Homsey Architects, Inc. of Wilmington, DE. For 65 years, Homsey Architects, Inc. has provided professional architectural design services to a variety of public and private clients throughout Delaware. They are Delaware's premier firm for projects on structures with historic value. This specialized expertise is critical for the architectural component of this project in Historic New Castle. Duffield has teamed with this firm before for multiple projects in the State.



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Development Group, Inc.

Duffield will team with the Delta Development Group, Inc. of Mechanicsburg, PA. Delta's goal for community/ economic development is to create practical, meaningful and innovative solutions that serve the needs of various communities. Delta's approach addresses the underlying factors of community livability and economic viability where all public and private interests can actively participate in the process. Duffield has teamed with this firm before and maintain a strong working relationship with this organization.

Hunter Research Historical Resource Consultants

For a Cultural Resource Consultant, Duffield will team with Hunter Research of Trenton, NJ. Hunter Research is widely recognized as a premier provider of consulting services in historical research, architectural history, archeology and preservation planning. Their expertise in underwater archeology will be utilized for this project. Their clients include many public, private and non- profit organizations throughout the Northeastern United States. Their goal is to satisfy clients with effective and prompt service that is respectful of our shared cultural heritage. Duffield has worked with Hunter Research before as well and has a strong working relationship.

Hydrographic Surveys

For Hydrographic/ Bathometric surveys, Duffield will team with Hydrographic Surveys of Sewell, NJ. Established in 1980, Hydrographic Surveys has a time- honored tradition of providing specialized water surveys for various waterfront projects. Duffield has worked with this company before and has established a dynamic working relationship with this company as well.

Team Experience with FEMA Programs

Duffield Associates has extensive experience working with both DEMA (the Delaware Emergency Management Agency) and FEMA regarding grant funding on behalf of our clients. This experience has included performing assessments of the feasibility of obtaining project funding and preparing grant applications to FEMA, as well as preparing design and bid documents for the work, review services during construction and grant documentation for project close-out. We have assisted public clients, including both New Castle County and the City of Wilmington, as well as private entities in successfully obtaining grants to fund projects from a number of FEMA programs and assisted them in navigating the application and documentation process, as well as in communicating with the DEMA and FEMA representatives throughout the grant cycle. Summaries of several of these projects are included in our qualifications package. Using this experience, Duffield Associates would be pleased to assist the City of New Castle in all phases of the grant evaluation, application and documentation process, including the preliminary steps of evaluating the feasibility of funding the proposed pier construction with FEMA funding and discussing funding options and details with the regulatory agencies.

UNDERSTANDING AND SCOPE

meeting with city representatives to discuss and confirm the project scope and schedule.

2. **Hydrological, Environmental and Cultural Surveys.** We will perform the following surveys and studies in support of preliminary engineering and permitting for the proposed riverfront redevelopment project;
 - Hydrographic (bathometric) survey of the Delaware River between the USACE ice breakers and the shoreline from Delaware street to the existing pier (catwalk). The hydrographic (bathometric) survey will be combined with a land based+or conventional survey to create an existing conditions survey drawing.
 - Delineation of high water and high-high water as well as wetlands. The locations of these features will be added to drawings for the proposed piers. Assess proposed pier locations and structure for potential impacts to wetlands and guide design activities to minimize potential impacts to wetlands.
 - Contact Delaware Natural Heritage Program and National Marine Fisheries Service for information on threatened or endangered species of flora and fauna that may be present in the project area. Assess the information provided by these agencies for potential impacts to threatened or endangered species and their habitat. If potential impacts are identified, guide design development to minimize those impacts.
 - Review historical maps, navigation charts and aerial photographs to develop an overview of historical maritime structures and possibly shipwrecks in the proposed location(s) for the new pier. Review the National Historic Register and City of New Castle historical information to develop a sense of the history of the proposed pier locations and to assess the potential for impacts to historical and cultural resources. Contact the State Historical Preservation Office (SHPO) to gain input regarding minimization of potential impacts to identified historical and cultural resources. Guide design development to minimize impacts to historical and cultural resources.

Please be advised that additional assessment of potential historical and cultural resources may be required to adequately assess potential impacts. Such assessments may include, but not be limited to, active investigations of potential submerged resources in the Delaware River using remote sensing techniques like side scan radars surveys and seismic profiling surveys.

 - Contact the United States Coast Guard, United States Army Corps of Engineers-Philadelphia District (Operations), the River Pilots Association for Delaware River and Bay to gain input on the proposed locations for the berth and orientation of the structure to minimize potential hazards and impacts to marine traffic.
3. **Location Assessment.** Based on the studies described above we will review the dock facility location and prepare a recommendation for the selected location. The results of the studies and recommended docking facility location will be presented at City of New Castle public meeting.
4. **Assess potential impacts to socio-economic resources in the City of New Castle.** This assessment will attempt to forecast: the number of temporary and full-time jobs that may result from the project, the revenue that may result from the project to the public and private sectors, the sociological changes that may be expected as a result of the project.



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ts. The project will change the aesthetics of the
. The team will seek input from stakeholders and
the project design to maximize aesthetic acceptance of

the proposed pier.

6. **Preliminary Engineering.** Develop preliminary engineering plans for the proposed docking facility as outlined in the Request for proposal sufficient for regulatory permitting and for future funding opportunities. The preliminary engineering will address issues relative to safety, silting and potential damage due to storms and sea level rise. Support amenities including restroom facilities, lighting, electric, security, potable water and sanitary sewer service for the proposed dock will also be preliminarily designed.
7. **Cost estimating and scheduling.** Develop a final design and construction cost estimate based on the preliminary engineering plans. An Operation and Maintenance document will be prepared which outlines suggested facility maintenance and associated probable cost associated with annual maintenance.
8. **Permitting.** The following regulatory permits will be prepared;
 - Prepare application documents for a State of Delaware, Wetlands and Subaqueous Lands Lease and Permit. We will prepare the documents required for submissions to the State of Delaware, Department of Natural Resources and Environmental Control (DNREC), Wetlands and Subaqueous Lands Section for the purpose of obtaining a construction permit for the pier and a lease for the subaqueous lands that will be occupied by the pier. If the City of New Castle owns or has delegated rights to the subaqueous lands that will be occupied by the pier, a lease application will not be required.
 - Prepare application documents for a Federal Individual Permit. We will prepare the documents required for submissions to the U.S. Army Corps of Engineers, Philadelphia District for the purpose of obtaining a Federal Individual Permit for the pier issued pursuant to Section 10 of the River And Harbors Act of 1899 and/or Section 404 of the Clean Water Act. A copy of the application documents will be submitted simultaneously to DNREC Wetlands and Subaqueous Lands Section for their consideration of issuing Water Quality Certification pursuant to Section 403 of the Clean Water Act and to DNREC Coastal Management Section for their consideration of issuing certification of compliance with the Federal Coastal Zone Management Plan for the State of Delaware.
9. **Meetings.** Attend City of New Castle meeting and workshops to review deliverables and report findings and project progress.



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IZATION AND RESUMES

Duffield Associates, Inc. appreciates the opportunity to describe in further detail our proposed project team and our commitment to meet the project requirements as defined in the Request for Proposal issued by the City of New Castle. Attached to this section is our proposed organization chart along with resumes of our project team members.

Duffield Associates proposed Prime Professional/ Project Manager for this project is John G. Fellows, R.L.A., LEED AP, a Senior Consultant with more than 25 years of experience in landscape architecture and planning, civil design and engineering, pedestrian and vehicular circulation design, grading, drainage, site lighting design and obtaining the required project approvals and permits. Mr. Fellows served as Project Manager for the waterfront redevelopment concept plan completed by this firm for the City of New Castle. This experience gives him a familiarity with the challenges for the project and a proven track record of working with the Historic New Castle Alliance, the New Castle Planning Commission and the New Castle City Council on this important project. He will be supported by Richard Beringer, P.E., LEED AP, REP for permitting and approvals. Mr. Beringer has more than 30 years of project management, planning, permitting assistance and environmental engineering experience. He will be assisted by Peter G. Kearney, P.E., Coastal/ Geotechnical Project Engineer. His extensive experience of multidisciplinary waterfront projects includes the Delaware City Marina Bank Stabilization, the Summit North Marina in Bear, DE and the Lightship Overfalls Berth in Lewes, DE. Joseph Jakubowski, P.E., LEED AP will also provide support as a Geotechnical/ Marine engineer. Dave Athey, P.E., a Senior Consultant and Water Resources Section Manager, also complements the team. He has over 25 years of experience in civil engineering and a variety of Municipal engineering assignments. This includes recent work for the City of New Castle and the City of Lewes. Steve Huff, P.E. provides the structural engineering support. Dave Grosse provides the Natural Resources/ Senior Project Scientist expertise drawing on his experience.

Included on our staff are environmental engineers and scientists, hydrologists, hydraulic engineers, civil engineers, chemical engineers, water resource experts, hydrogeologists, geologists, geotechnical engineers, structural engineers, construction engineers, and a technical support staff. Furthermore, our supervisors also have current 8-Hour OSHA Supervisor's Training in addition to their other technical training.

In conclusion, we are confident that our proposed team has the appropriate combination of experience, education and professionalism to deliver a highly successful project to the City of New Castle. Our previous experience at working with the City of New Castle is also an asset for this project.



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Organization Chart
The City of New Castle, DE
Waterfront Access- Preliminary Engineering
And Permitting Phase

PROJECT TEAM

THE CITY OF NEW CASTLE

DUFFIELD ASSOCIATES, INC.

Prime Professional

John G. Fellows, R.L.A., LEED AP

Senior Consultants

Jeffrey M. Bross, P.E., LEED AP

Project Engineers

David J. Athey, P.E.
Peter G. Kearney, P.E.

In House Support

Geotechnical Engineering
Joe Jakubowski, P.E.

Environmental Services
Rick Beringer, P.E.

Natural Resource /Permitting
Construction Services
Materials Testing
Structural Engineering

Team

Peter G. Kearney, P.E.

Sub-Consultant Support
DEDC Consulting Eng.
Homsey Architects, Inc.
Delta Development Group
Hunter Research
Hydrographic Surveys

D A P

Professional Registration:	Registered Landscape Architect . Delaware, Pennsylvania, Maryland, New Jersey
Education:	B.S., Landscape Architecture, Penn State University 1985
Memberships/Associations	American Society of Landscape Architects American Planning Association Maryland Park and Recreation Association Pennsylvania Planning Association U.S. Green Building Council

Background/Skills

Mr. Fellows has 25 years of experience in landscape architecture and planning, and civil design and engineering of land development and subdivision projects. Project tasks include: vehicular and pedestrian circulation design; grading, drainage, erosion control and sanitary sewer design; and site lighting designs. Projects required careful review and adherence to ordinances and codes; creative funding and assisting with grant applications; obtaining required project approval and permits; and client maintenance, invoicing and collection.

Selected Project Experience

Project Manager – City of New Castle Waterfront Redevelopment Master Plan, City of New Castle, DE

Principal Landscape Architect for master planning the City of New Castle Delaware River waterfront area to provide boat dockage space for day visitors as well as to provide a seasonal docking facility for the Kalmar Nyckel and the Delaware River and Bay Authority %Three Forts Ferry+. This docking facility is also planned to provide a much needed permanent location for the Good Will Fire Company rescue boat.

The existing pier at the city's Battery Park was evaluated for reuse and expansion for the proposed purpose but because of docks location further south the flood tide event would run perpendicular to the dock face making this location extremely difficult for larger ships like the Kalmar Nyckel and the Three Forts Ferry. The current location of a new dock was selected so that the tide current would flow parallel to the face of the dock. The final master plan was presented at a community design charette and approved by the City of New Castle.

Landscape Architect – Christiana Care Health Systems Freestanding Emergency Department, Middletown, DE

Duffield Associates was retained to prepare landscape and hardscape designs to enhance the main entrance of their new Freestanding Emergency Department building. One of the main features of this design was a pedestrian %contemplation+plaza adjacent to the main entrance. This plaza space features planters, fountains, seating areas, landscaping and soft lighting all designed to provide a peaceful and tranquil contemplation space. The landscaping at the main entrance as well as the paver design of the main vehicular drop off area is intended to be inviting and accent the building entryway.

Landscape Architect – Fisker Automotive Master Planning Site Development, Newport, DE 2011

Duffield Associates is working with Fisker Automotivesqs planning team to develop a master plan for redevelopment of a vacant automotive manufacturing plant in Wilmington, Delaware. The master plan will address exterior space improvements, such as vehicular and pedestrian circulation, parking facilities, landscaping and green space amenities, and stormwater quality improvements, and will incorporate sustainable site design principals. Mr. Fellows is the site designer and landscape architect lead on this project.

Landscape Architect – H.O. Brittingham Elementary School Rain Garden, Milton, DE 2011

Mr. Fellows was the lead designer of a rain garden proposed at the school intended to not only improve water quality in the Broadkill River but be an outdoor science classroom as well. Native plants were utilized for this project funded by a DNREC Clean Water Advisory Council grant.

Landscape Architect – Skipjack Cove Yachting Resort, Cecil County, MD 2009

Design of a 53,071 SF four-story dry boat storage building and associated access, parking, stormwater management, and fire protection improvements.

Landscape Architect – North East River Yacht Club, Cecil County, MD 2008

Design of bulkhead replacement and dredging of the boat basin.

Landscape Architect – Anchor Marina, North East, MD 2009

Design of an office and maintenance building. (2009)



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AP, F. ACEC

Professional Registration:	Professional Engineer - Delaware, Nebraska, Maryland, New Jersey, Pennsylvania Delaware Class C - On-Site Wastewater System Designer
Education	B.C.E., University of Delaware, 1969 24 hours post-graduate study in Coastal Engineering/Hydrology
Memberships/Associations	Founder/Past Co-Chairman and member of the New Castle County Economic Development Council. Former President and Board Member of the Committee of 100 as well as Past-Chair and member of the National American Council of Engineering Companies and Associated General Contractors Construction Liaison Committee. Member of the American Society of Civil Engineers, Consulting Engineers Council of Delaware, National Society of Professional Engineers, American Public Works Association, and the Environmental Business Action Coalition. Appointed member of the State of Delaware Workforce Investment Board, Stormwater Management Task Force, and the New Castle County Executive Task Force on Redevelopment. Appointed member of the Livable Delaware, Infill and Redevelopment Subcommittee. Appointed member and Vice-Chair of the Clean Water Advisory Council, Chair of Surface Water Subcommittee of the Delaware Clean Water Advisory Council and appointed member of the Delaware Redevelopment Authority. Member, Delaware Geological Survey, Geologic Mapping Advisory Committee. Jury Chairperson of the Delaware Valley Smart Growth Alliance and former Jury Member for 10,000 Friends of Pennsylvania Commonwealth Awards. Chairman of Delaware EPSCoR State Committee and Member of the DENIN External Advisory Board.

Background/Skills

Mr. Bross has consulting and project management responsibility for civil engineering, coastal engineering, water resources, environmental, hazardous waste, and regulatory agency projects. He has extensive experience in the preparation and attainment of permits and the development of requisite mitigation associated with permitting for difficult and challenging projects. Mr. Bross has been a principal regulatory negotiator and has a strong working relationship with local, state, and federal regulatory agencies throughout the Mid-Atlantic region. He was instrumental in drafting the revision of the Unified Development Code (UDC) of New Castle County on behalf of the Consulting Engineers Council of Delaware, Committee of 100, and the New Castle County Chamber of Commerce. He has a strong working knowledge of the UDC and speaks on the topic to business, real estate and professional groups. He has authored numerous technical articles and papers, and is a featured speaker on issues involving environmental and construction matters. Mr. Bross was named Delaware 2006 Engineer of the Year by the Delaware Council of Engineering Societies.

Selected Project Experience

Principal-in-Charge – Three Forts Crossing Master Plan, Delaware and New Jersey

Duffield Associates provided engineering services to support the development of a Master Plan for this Delaware River & Bay Authority DRBA project. Base maps were created for five sites designated to be included in the Master Plan. These sites were: Delaware City, Old New Castle and The City of Wilmington, Delaware; and Pennsville and Penns Grove, New Jersey. Our team also evaluated permitting issues and developed a briefing memo and an order-of-magnitude.

Project Manager – Fort DuPont Emergency Staging, Delaware City, DE

Mr. Bross served as a Project Manager for a DEMA funded study to utilize Fort DuPont as a catastrophic disaster staging area. Services included conducting planning workshops.

Principal-in-Charge – Delaware City Marina, Delaware City, DE

Duffield Associates evaluated, designed and permitted a major bank stabilization project along the old canal marina banks to reduce erosion and improve water quality.

Principal-In-Charge – Eleutherian Dam, Hagley Museum and Library, Wilmington, DE

This project involved the restoration of an approximately 200 year old masonry/timber dam and adjacent millrace on the Brandywine River. Project included a detailed structural review of the dam and mill race existing condition as well as designing structural repairs for the proposed renovation. Extensive coordination and permitting between multiple federal, state, and local agencies was required to develop the restoration. The restoration consisted of constructing a new concrete support slab and adding wooden planking to the dam face. Due to the complexities with the project and operating in a river environment, Duffield Associates provided construction services through our affiliate, CGC Geoservices, Inc.

Project Manager – Stone Harbor Bird Sanctuary Separator Dike, Stone Harbor, NJ, 2007

Mr. Bross was Project Manager for this landmark ecologic renovation project which involved the study and design of a tidal regulator structure and the construction of an approximately 400 foot long earthen dike and pedestrian path to isolate salt water and fresh water impoundments within the sanctuary.



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mitigation, Delaware City, DE , 2004

ing mitigation projects in Delaware City spanning over 30 years. The initial
ion dikes and flood walls and the subsequent project involved the raising and
d dike system to mitigate prevailing flood design elevations.

Principal-in-Charge – Bay View Beach, Bay View Beach, DE, 2010

Duffield Associates performed a review of an existing concrete retaining wall that currently acts as a bulkhead due to continual beach loss and scour at the toe of the structure. As part of our evaluation, we visually reviewed the conditions, provided recommendations for repair and/or replacement, provided conceptual cost estimates, and assisted them in contacting agencies that could possibly provide financial assistance for their failing wall.

Managing Principal – Shellpot Creek Watershed Study, New Castle County, Delaware, 2000

The watershed study, which was funded and directed by a consortium of governmental agencies, had the goal of identifying and mitigating basin-wide flooding problems and developing water quality measures and neighborhood programs to enhance riparian areas and improve water quality. This study, which will result in the implementation of over several million dollars in mitigation measures, will become a model for future watershed studies in New Castle County. Mr. Bross implemented a number of innovative and effective methods for gathering citizen input and disseminating information to residents affected by this study. These methods included public workshop sessions enabling citizen discussion directly with key project staff; preparation of a pre-study informational bulletin, and use of a web site to keep residents abreast of study progress and enable them to ask questions and receive answers by e-mail.

Principal-In-Charge/Senior Consultant – Rancocas Creek Dam Failures & Flooding Evaluation, 2005

Mr. Bross was the Principal-In-Charge of this project for professional engineering and science services related to multiple dam and dike failures and resultant flooding on the Rancocas Creek and its tributary branches. Duffield Associates was responsible for with evaluating potential causes and resultant damage impacts brought about by the failure of up to 10 impoundment structures.

Principal-In-Charge - Multipurpose Dock Study, Port of Wilmington, DE

Mr. Bross served as Principal-In-Charge and Sr. Consultant for a feasibility study of a new RO/RO and multipurpose double berth dock. The study included: bathymetric surveys; offshore geotechnical evaluations; environmental and wetlands studies; modeling to evaluate maintenance dredging requirements; preliminary design of dock structure and causeway; preliminary design of access roadways and utilities; regulatory liaison; cost estimates; and schedule preparation.

Principal-In-Charge, Stone Harbor Bird Sanctuary Rejuvenation, Borough of Stone Harbor, NJ, 2005-present

Assisting the Borough with a rejuvenation effort for the Sanctuary to restore habitat for wading birds (7000+ nests) that historically nested at this barrier island dune/marsh mosaic. Services include wetlands delineation, USACE/NJDEP permitting, mitigation design for wetlands, protected species consultation, invasive species management, protected species habitat management for this National Natural Landmark.

Project Manager - Indian River Inlet North Channel Closure, Delaware

Mr. Bross was Project Manager for the North Channel Closure Project at the Indian River Inlet for the Delaware Department of Natural Resources and Environmental Control. This project involved hydraulic modeling; sediment sampling and transport analysis; geotechnical evaluation; design; permitting; and construction review.

Senior Consultant - Wilmington Harbor South, DE

This project included the construction of a 7,000-ft long containment dike for dredge spoil disposal in the Delaware River. Construction of the dike required the placement of a high-strength geotextile reinforcement to provide adequate stability. Mr. Bross was responsible for providing technical guidance and oversight.

Project Manager - Beach Erosion and Hurricane Protection, Delaware Coastline

Mr. Bross served as Project Manager and Key Technical Member for the first Phase II General Design Memorandum prepared for the Philadelphia District Army Corps of Engineer. This study utilized predictive models to evaluate littoral movement, storm surges, and wave action along Delaware's Atlantic Coast. The study evaluated and recommended a combination of structural, operational, and institutional solutions to protect natural resources and public/private property, as well as to enhance recreational opportunities. Extensive evaluations were performed on groins, jetties, bulkheads, nearshore and offshore beach nourishment, sand bypass, dune reconstruction, and revegetation. The study also required detailed topographic, bathymetric, geotechnical and vibrocore surveys and investigations. Benefit-cost analyses were performed using economic studies developed as part of the study.

Project Manager - Groin Design, Atlantic Coast, Delaware

Over the last 25 years, Mr. Bross served as Project Engineer and Project Manager for multiple beach erosion control projects, groin design and reconstruction projects, and groin studies at many locations along Delaware's Atlantic Coast. This work included littoral and wave studies, geotechnical evaluations, design, permitting, and community involvement.

Project Manager - Flood Studies, New Castle County, Delaware

Mr. Bross served as Project Manager for flood studies in 18 major watersheds throughout New Castle County. These studies included the acquisition of topographic and structural surveys, hydrologic computations, flood plain modeling, and recommendations for flooding mitigation. Watershed basins included White Clay Creek, Belltown Run, Hyde Run, Cool Run, South Branch Naamans Creek, White Clay Creek, Appoquinimink River, Christina River, Shellpot Creek, Silverbrook Run, Matson Run, Little Mill Creek, Magazine Ditch, Broad Dyke, Buttonwood Ditch, Red Lion Creek, and Dragon Run Creek.

Project Manager - Belltown Run Basin Study, New Castle County, DE

This study represented County Government's first successful effort to perform a basin-wide study to plan and develop sewer infrastructure, stormwater management and environmental protection standards on a comprehensive basis in advance of full-scale basin-wide development. This study served as the standard for future studies and stormwater management and sediment/erosion control efforts now widely used throughout the County. It also provided a mechanism for public/private partnerships to construct necessary wastewater conveyance systems.

Professional Registrations	Professional Engineer . Delaware, Maryland, Pennsylvania
Education	MPA, Public Administration, University of Delaware, 1999 BCE, Civil Engineering, Georgia Institute of Technology, 1982
Certification	Certified Professional in Storm Water Quality (CPSWQ)
Memberships/Associations	American Public Works Association, DE State Chapter . Board of Directors Delaware Nature Society . Associated Board Member Delaware Nature Society . Watershed Stewardship Committee Chair Delaware Natural Areas Advisory Council . Vice Chair Christina Conservancy . Board of Directors Member Association of Watershed and Stormwater Professionals . Member

Background/Skills

Mr. Athey has nearly 30 years of experience in a broad range of civil engineering fields specializing in water resources and public works. He has designed storm sewer networks and culverts, bioretention facilities, and dozens of retention and detention basins; retrofitted existing stormwater features; performed hydrologic and hydraulic studies; mitigated drainage problems in multiple jurisdictions; and prepared plans and specifications for infrastructure repair and replacement projects. His program administration experience includes stormwater utility evaluations, levels of service studies, rate determinations, and asset management applications.

His varied background including private consulting firms, government agencies, and nonprofit organizations results in a broad understanding of technical and non-technical issues that are often needed to determine viable solutions to engineering challenges. He has been a Director in the Delaware chapter of the American Public Works Association since 2001 and as an indication of his reputation among his peers, was elected to the State regulatory board for professional engineering in 2002. In 2007, Mr. Athey became the first Certified Professional in Storm Water Quality practicing in Delaware through a program developed by the Soil and Water Conservation Society and the International Erosion Control Association.

He has nearly ten years of experience in public office and is accustomed to working with other elected officials and government employees as well as the active citizenry. In 2005 he was appointed to Delaware's Natural Areas Advisory Council by then Governor Minner and was reappointed by Governor Markell in 2009. He is currently Chair of the Watershed Stewardship Committee at the Delaware Nature Society, where he is also an Associate Board Member, and serves on the Board of the Christina Conservancy.

Mr. Athey's expertise has been drawn upon for numerous presentations at national and regional conferences. His design of the Cedar Pointe Stormwater Retrofit project for New Castle County received the Grand Conceptor award (highest honor) in 2008 from the Delaware section of the American Council of Engineering Companies. In 2003, DelDOT presented him with an Excellence in Consultant Project Management certificate which coincided with the Department's Outstanding Project Award for the Storm Drainage Inventory he was managing in New Castle County.

Selected Project Experience

Project Manager – Pike Creek Water Quality Improvement Plan Pilot Study, New Castle County, DE, 2011-2012

Leveraged grant funds and worked with partners DelDOT and the Water Resources Agency at the University of Delaware. Oversaw the development of water quality loading models, prioritization of subwatersheds, ranking of potential areas for new best management practices or retrofit of existing structures, field reconnaissance of 46 potential project locations, development of a watershed scale Runoff Reduction Model which incorporated aspects of PLOAD and DNREC's DURMM model, and preparation of recommendations. Identified opportunities for new facilities based on factors such as construction and O&M costs, access, and natural limitations (topography, groundwater, soils, etc.). Quantified resulting decreases in effective impervious area and reductions in pollutant loadings. Overall intent of project was to develop guidance for WQIP plan development that would meet NPDES permit requirements and be exported to other watersheds in the County.

Project Manager – Kent County Stormwater Management Service District, Kent County, DE, 2011-present

Obtained grant on behalf of the County and the Kent Conservation District to develop framework for the creation of a new District that would be responsible for the maintenance of privately-owned stormwater management facilities. Objective would be for new developments to be required to join District as part of approval process while incentives would encourage existing developments to join. Directed the analysis of georeferenced databases of subdivisions and existing facilities and prepared financial evaluation to use in determining costs to individual home owners for maintenance of their community's stormwater basins or BMPs. Developed age and condition criteria for development of potential future maintenance and renovation costs should older facilities seek inclusion in District. Determined areas of responsibility and recommended access and accounting methods. Implementation phase planned pending award of additional grant.



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Age Advisory Committee, Dover, DE, 2011-present

Providing administrative and technical support to the Committee created by Senate Bill 64 in 2011 to develop standards for future adoption by local governments. Researching best practices being used in other jurisdictions or recommended by professional organizations and preparing standards and recommendations for consideration and debate by Committee members. Made multiple presentations, facilitated discussions, and prepared meeting notes summarizing conversations. Once draft standards are adopted, will prepare revised document for further Committee discussion and ultimate reporting to the General Assembly.

Project Manager – New Castle County Phase I NPDES Permit, New Castle County, DE, 2008-present

Assisting the County through multiple drafts of their MS4 permitting program. Utilized existing database of approximately 1,000 stormwater management basins throughout the County and analyzed future retrofit opportunities taking into account waterway impairments identified by TMDL. Developed framework for inter-municipal agreements for the County's co-permittees and developed structure for the preparation of Watershed Retrofit Plans. Most recently demonstrated how the use of nonstructural BMPs on an equivalent area basis could be as or more effective in reducing pollutant loadings than storage-based structural BMPs, a critical point in the pending NPDES permit.

Project Manager – Lewes Board of Public Works Stormwater Master Plan, Lewes, DE, 2012

Objective is to establish a baseline of the currently unmapped drainage system and develop a plan for operation and maintenance. Field components include an inventory of inlets and outfall and open channel assessments. Results will be entered into a previously prepared database that will be modified. Once completed, a capacity evaluation will be performed of main trunk lines or those which receive flow from multiple inlets and are at least 18 inches in diameter or greater. The hydraulic grade line in each main trunk line will be calculated to evaluate if a pipe is under, at, or over capacity. The final report will include observed inlet or pipe conditions and/or defects, the preliminary evaluation of system capacity, and recommendations categorized as maintenance issues and long-term capital items.

Subconsultant – New Castle County Stormwater Utility Feasibility Study, New Castle County, DE, 2006-2009

Prepared a detailed program analysis and cost summary of existing stormwater-related programs in New Castle County. Identified program gaps and overlaps in service delivery between agencies and jurisdictions, NPDES permitting issues, maintenance of public and private stormwater structures, and future needs. Particular emphasis given to current and projected funding. Presented program elements at public meeting of stakeholders. Program document formed the basis for determining potential utility structure and funding requirements.

Project Manager – Chester County, Pennsylvania NPDES Phase II Permit, Chester County, PA, 2004-present

Coordinated with County personnel from initial application through nine annual reports to DEP for an NPDES Phase II permit for County facilities. In addition to guiding the application process, also represented the County at meetings with DEP, advised on sampling programs conducted by County personnel, and prepared multiple documents in support of the application and each report. Submitted Notice of Intent (NOI) for coverage under next NPDES permit in September 2012 which included redefinition of outfalls in regulated urbanized areas and database of County-maintained BMPs.

Project Manager – Centreville Stormwater Utility Feasibility Study, Centreville, MD, 2010

First phase of project was inspections of detention basins and storm inlets and pipe networks and development of maintenance needs and subsequent estimates of associated costs. Following interviews with City staff, expenditures were developed for their existing program and for three potential levels of service that would enable the Town to undertake not only more proactive maintenance of its system but water quality retrofits, capital construction, and maintenance of privately owned stormwater management basins should it opt for this undertaking. Revenues for various stormwater utility fees and fee structures were estimated and the feasibility and affects of credit programs and fee exemptions evaluated in the final report.

Project Manager – Lewes Board of Public Works Stormwater Utility Feasibility Study, Lewes, DE, 2007-2008

Investigated existing municipal operations and anticipated program/project needs to establish future funding requirements. Performed impervious coverage assessment of residential and non-residential properties and isolated tax-exempt parcels owned by the State and nonprofit organizations. Analyzed numerous utility rate structures such as a multi-tiered residential assessment as well as the impacts of potential credits and exemptions. Developed approximate rates coinciding with two scenarios, Full Program and Limited Program. Worked with City Solicitor on legal aspects. Presented preliminary findings at public meeting in December 2007. Final report with recommendations to proceed to the utility implementation stage submitted in February 2008 and presented to Board in March 2008.

Project Manager – Lewes Board of Public Works Water and Sewer Cost of Services Analyses, Lewes, DE, 2009-2010

Analyzed costs for providing water and sewer services for City residents and businesses and customers residing outside of City. Categorized and compiled flow records and revenue data for numerous meter sizes and customer classifications and assessed other income sources. Determined fixed and variable expenditures including salaries, operations and maintenance, depreciation, etc., and grouped expenditures by fixed and variable categories. Preliminary rates presented to Board in January 2010 that included inclined rate structure, new classifications for commercial and industrial customers, and rate differentials between various classifications. Presented recommendations at public hearing in April 2010 which were adopted.

Project Manager – Level of Service Analysis of Surface Water Management Needs, Sussex County, DE, 2007-2008

Completed analysis of surface water management in the 938 square mile County including investigation of the activities and funding needs of four agencies at the State or County level, 25 municipalities, 136 tax ditch organizations, and countless private entities. Utilized GIS files to perform spatial evaluation of agency areas of responsibility. Study assessed existing funding mechanisms and options available for increasing funds and determining which agencies or organizations are best suited to perform certain tasks, how communication and coordination between agencies and organizations can be improved, and how surface water management can be better integrated with planning efforts. Final report and recommendations completed in August 2008.

Project Manager – Level of Service Analysis of Surface Water Management Needs, Kent County, DE, 2008-2010

Similar to the Sussex County project, the Kent County project was initiated with the kick-off meeting in May, 2008. Over a dozen agencies and stakeholders were interviewed and service gaps and overlaps developed for 12 program areas. Staffing and funding needs were determined for each with recommendations presented in May 2009 to the Kent Conservation District Board and members of the Kent County Levy Court. Subsequently developed strategies and cash flow models for the creation of stormwater management districts for new and ultimately existing home owner associations as a potential segue to a more structured stormwater utility. Final report delivered in May 2010.



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Engineer

Registrations: Professional Engineer, Delaware, 2004

Education M.C.E., University of Delaware (concentration in Coastal Engineering), 2001
B.C.E., University of Delaware, 1996
B.S., Agricultural Engineering, University of Delaware, 1993

Background/Skills

Coastal Engineering - Mr. Kearney provides technical and design support for coastal and coastal related projects, which include: sediment management, wind and wave prediction and analysis, analysis of wave forces, current force analysis, wave runup and overtopping on coastal structures, structural and non-structural design of shore protection methods, design cost analyses as well as estimating project construction costs, and technical report preparation.

Geotechnical Engineering . Mr. Kearney serves as a Project Manager managing multidisciplinary projects including: geotechnical design analysis; coastal design and analysis; construction review; environmental consulting; and technical report preparation and review. In addition, Mr. Kearney provides QA/QC oversight for the soils testing laboratory and geotechnical field instrumentation projects. His field construction experience includes review of earthwork, concrete construction, structural steel erection, and retaining wall construction. In addition, Mr. Kearney provides coordination, layout, performance, and review of site investigations on land and over water including soil and rock Standard Penetration Test borings, Cone Penetrometer Test borings, vibrocoring, exploratory test pit excavation, and geoaoustic surveys.

Selected Project Experience

Project Engineer - Delaware City Marina Bank Stabilization

Duffield Associates provided professional engineering services and prepared design documents for the stabilization of approximately 900 feet of eroded slope along the Delaware City Canal located at the Delaware City Marina.

Coastal Engineer – Summit North Marina, Bear, Delaware

Services for this ongoing project have included gathering of historical climate and ship traffic information for the purpose of predicting and analyzing wave heights and forces related to a revetment design. Preliminary design of a geotube revetment filled with dredged materials for the purpose of beneficial reuse was also provided. The project has received a provisional permit from the USACE. Work currently being coordinated includes a geotechnical evaluation for the revetment foundation as well as analysis of the sediment, sediment transport analysis, and final design of the shore protection structure.

Project Manager - Lightship Overfalls Berth – Lewes, DE

The Lightship Overalls is one of a handful of lightships that remain in the United States today. Duffield Associates was retained to assist the Overalls Foundation in determining the best way to display the ship as a permanent landmark for the public to visit. One of the main problems was that the ship has been sitting in mud for over 35 years and the condition of the hull was unknown. Although outside our area of expertise, we assisted the Overfalls Foundation in contacting professionals who could evaluate the ship and make recommendations for movement and repair at a shipyard. The project is on-going, but to date, we have assisted the Overfalls Foundation in obtaining the necessary State and Federal permits, as well as designed a permanent floating berth consisting of sheet pile bulkheading.

Project Engineer, U.S. Army Corps of Engineers, Open Ended Delivery Contract, NJ, MD, DE, PA

Duffield Associates was retained for three one year Indefinite Delivery Contracts for geotechnical and geo-environmental services with emphasis on geotechnical investigations and design, coastal structures, beachfill borrow investigation, and HTRW evaluation. Mr. Kearney selected and coordinated subcontracts as well as performed on-land and offshore field investigations, laboratory testing, analysis including utilization of the Automated Coastal Engineering System program (ACES), and report preparation for many of the individual task orders under this contract.

Project Manager – High Bar Harbor Yacht Club, Barnegat Light, NJ

The purpose of this project was to perform a concept level evaluation for the purpose of developing possible alternatives to mitigate wave damage that occurs within the HBHYC marina during storm events that are predominantly from the northeast direction. Tasks included wind, wave and force analysis on a breakwater as well as providing concept level costs for engineering and construction.

Project Manager – Yank Marine Services Waterfront Reconfiguration for a 600-Ton Boat Lift, Dorchester, NJ

The site owners wished to expand their services to include maintenance, repair, and construction of vessels as large as 600-tons. This on-going multidiscipline project includes assisting our client with evaluating and designing waterfront structures to support a 600-ton traveling boat-lift. Tasks include: geotechnical, environmental sampling, permit application preparation, a structural design of a 150-foot by 48-foot wide by 20-foot deep lift well. Duffield Associates prepared NJDEP and USACE permit applications, performed a geotechnical investigation and deep pile foundations analysis, as well as structural design and drawing preparation in AutoCAD. Individual responsibilities included oversight of permit application project, coordination of geotechnical investigation as well as geotechnical and structural design elements.



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ED AP, REP

Registrations: Professional Engineer, New Jersey, Delaware
Renewable Energy Professional
EPA Asbestos Hazard Emergency Response Act (AHERA) Project Designer, MD
Certified Asbestos Project Supervisor, Delaware
Certified Asbestos Project Monitor, Delaware
40 hour HAZWOPER

Education Bachelor of Science, Civil Engineering, Lafayette College, 1979

Background/Skills

Mr. Beringer has thirty years of environmental experience. He is responsible for project management, planning, and technical issues for environmental engineering and science projects. Project experience includes: project planning and permitting assistance; Phase I, and II Environmental Assessments; hydrogeologic investigations, sediment and water quality assessments, remedial investigations, water/wastewater studies, NPDES compliance, environmental impact statements (EIS), state and federal Superfund Sites site evaluation and remediation; emergency response actions; industrial waste landfill design, flood modeling and flood hazard reduction planning; and Brownfield Program Sites. Additionally, Mr. Beringer has oversight responsibility for asbestos removal, specifications and design. Other areas of expertise include strategic planning for environmental projects, dredging assessments, air emissions calculations, Clean Water Act compliance, monitoring and reporting, waste water treatment plant operations and water/wastewater treatment compliance and monitoring. In addition, Mr. Beringer's experience includes environmental compliance audits of potable water treatment and distribution systems and wastewater collection and treatment systems, as well as inventories of air emission sources. Mr. Beringer has completed inflow and infiltration studies, system condition assessments, including video inspection of sewers, and developed rehabilitation recommendations, plans and specifications for sewer repairs.

Prior to joining Duffield Associates, Mr. Beringer was Section Head for the Technical Section, Environmental Restoration Branch of Northern Division, Naval Facilities Engineering Command. He was responsible for the technical aspects of the Navy's environmental investigations and remediations in the 26 Northeastern States. Areas of expertise included CERCLA, RCRA, CWA and NEPA work.

From 1981 to 1984, Mr. Beringer worked at the Naval Air Engineering Center in Lakehurst, NJ as an Environmental Engineer. Responsibilities included Wastewater Treatment, Potable Water Supply and NPDES discharge monitoring and reporting. He was involved with cleaning up spills at the operational airport, investigating and remediating petroleum releases involved with fuel storage, training crash crews on environmental issues, monitoring compliance with TSCA, CWA and RCRA, performing NEPA assessments for runway extensions and clear zone impact.

From 1979 to 1981, Mr. Beringer was an environmental engineer working for the New Jersey Department of Environmental Protection, Bureau of Flood Plain Management. Mr. Beringer reviewed project applications for Stream Encroachment Permits, assisted applicants with technical issues regarding structures in flood plains, and performed hydraulic and hydrologic modeling of riverine systems.

Selected Project Experience

Project Manager - Environmental Permitting, Multipurpose Dock, Wilmington Harbor, DE, 2001

Mr. Beringer was responsible for obtaining individual wetlands permits from the U.S. Army Corps of Engineers and Delaware Department of Natural Resources and Environmental Control (DNREC), and subaqueous land permits and Coastal Zone Status Determination both from DNREC. He provided an environmental impact analysis for this proposed offshore structure. He also evaluated dredge materials for reuse in parking lots and health and safety issues related to handling of soils disturbed by construction. All permits were successfully obtained.

Project Manager - Energy Plant Permitting Assistance, New Castle County, DE, 2011

Mr. Beringer has assisted an energy company acquire a State of Delaware Coastal Zone Permit and an Underground Injection Control Permit in support of a new power production facility in New Castle County, Delaware. Services provided have included environmental and natural resources assessments in support of the project, estimations of specific environmental impacts (as defined by the Coastal Zone regulations), developing offset proposals for those impacts, and negotiating with regulatory agency personnel on the client's behalf.

Coastal Zone Permitting, New Castle County, DE

Mr. Beringer is assisting an industrial client located in New Castle County, DE obtain a Delaware Coastal Zone Act permit for a new processing facility. The scope of services includes liaison with the Secretary of the Environment's Office, performing required environmental assessments, identifying discharges and potential impacts to the environment, and providing design assistance to minimize identified discharges or impacts, and creating off-sets for discharges and impacts that are unavoidable.

nty, DE

Mr. Beringer assisted an alternative energy provider obtain approvals and permits for a temporary barge landing facility on the Delaware River, where the client could accept delivery of large electrical power generating units. Services included performing environmental assessments to identify potential environmental impacts, assisting with the design of the landing structures to minimize environmental impacts, working with the Secretary of the Environment Office to obtain a Coastal Zone Act opinion regarding the proposed operation, preparing an application for a State of Delaware Subaqueous Lands Permit, and providing notification to the U.S Army Corps of Engineers in support of the project's use of a Nationwide Permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Project Manager – Expansion of Summit North Marina, Summit, Delaware, 2003

Mr. Beringer managed and provided senior consultation for a major expansion of this large marina located in the tidal estuarine environment of the Chesapeake and Delaware Canal in Delaware. The project included assessments of sediment and water quality within the marina basin in support of the facilities expansion and basin dredging, delineation of wetlands, environmental assessment in accordance with the National Environmental Policy Act (NEPA), design of the docking structures, access roads, access ramps, and support facilities, and permitting assistance for federal and State of Delaware permits required for the project.

Environmental Project Manager – Lewes Canalfront Park, Lewes, DE, 2003

Environmental services included: An asbestos survey of the Net House and the Quonset Hut; Waste characterization of stockpiled materials excavated during sewer replacement; Preparation of a U.S. Housing and Urban Development (HUD) Environmental Review Record (ERR) for the proposed restroom facility. This was a NEPA-compliant Environmental Assessment (EA) and Finding of No Significant Impact (FONSI); Assessment of sediment quality; Assisting the City of Lewes with complying with the DNREC Plan of Remedial Action and expense reimbursement under the State of Delaware Brownfield Program; and prepared the Remedial Design for the property.

Project Manager - Environmental Permitting, Barge Landing Site, New Castle County, Delaware

Mr. Beringer managed environmental permitting activities for an equipment delivery barge landing at an industrial construction site in New Castle County, Delaware. Tasks included: negotiations with State of Delaware and federal regulatory agencies, preparation and submittal of a federal Section 10 - Rivers and Harbors Act permit application, preparation and submittal of a State of Delaware Wetlands and Subaqueous Lands permit application, and completion of environmental and historical resources assessments. Permit approvals were obtained.

Senior Technical Consultant - Environmental Assessment of Sediments, Bethany Beach, DE

Mr. Beringer served as senior consultant during an environmental assessment of Atlantic Ocean sediments that were being considered for use as beach replenishment by the U.S. Army Corps of Engineers. The data collection included vibrocore sediment sampling and analysis of the samples for inorganic and organic substances, including 209 PCB congeners to part per quadrillion concentrations. The data was reduced, transformed and used to generate risk assessments to identify potential impacts to benthic and pelagic biota at the borrow site, littoral zone biota at the beach sites and human health at the beach sites. Based on the strength of the assessment, the project was approved by the federal and State of Delaware environmental regulatory agencies.

Project Manager/Senior Technical Consultant - White Clay Creek Flood Damage Mitigation

The project was intended to develop viable options for reducing flood-related property damage, and generate updated hydrologic and hydraulic information for use in a larger scale study of White Clay Creek (WCC) that will be coordinated by the U.S. Army Corps of Engineers. Tasks performed included:

- Gathering existing & generating new detailed topography along WCC along a ten mile reach of White Clay Creek;
- Developing standard recurrence interval flood flow rates from stream gauge data;
- Reviewing reports of flood damage;
- Identifying and assessing probable causes of recent flooding;
- Developing and calibrating a steady state peak flow rate model;
- Developing concepts for reducing flood damage; and
- Modeling the potential effectiveness of the flood damage concepts.

Flow modeling was accomplished using the U.S. Army Corps of Engineers HEC-RAS software. Recommended actions were provided after comparing implementation costs to flood damage reduction values.

Sr. Consultant/Project Mgr - Casino Reinvestment Development Authority, Golden Key Yacht Club, Atlantic City, NJ

Senior Consultant and Project Manager for an assessment of permitting issues associated with the reconstruction of piles, bulkheads, docks, utilities, roadway and sidewalks. Scope of work included identifying all federal, state and local permits that would be required for the project and design issues associated with obtaining those permits.

Senior Consultant - Bethany Beach Replenishment, U.S. Army Corps of Engineers, Philadelphia District, 2001

Mr. Beringer arranged the analysis of vibrocore sediment samples of Atlantic Ocean sand deposits. The evaluation assessed the suitability for using these deposits for dredging and beach replenishment. Data generated by the analyses included PCB, dioxin and furan concentrations to sub-part per trillion levels. These data were assessed for potential human health, environmental health and water quality implications.



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LEED AP

Professional Registration:	Professional Engineer . Delaware (2008), Maryland (2011)
Training:	Troxler Nuclear Soil Density Testing Certified, Troxler Electronics Lab. (05/01)
Education:	M.S.C.E., University of Massachusetts Amherst, 2005 B.S.C.E., University of Delaware, 2001
Memberships/Associations	Associate Member, American Society of Civil Engineers Delaware Contractors Association

Skills/Background

Mr. Jakubowski serves as a geotechnical project engineer and project manager with experience with in situ testing, groundwater sampling, foundation analysis, pavement recommendations, site investigations, report writing, project management and budgeting, and the LEED green building certification system. Mr. Jakubowski also supervises construction review staff and performs concrete laboratory testing and review of instrumentation installation, shallow foundation subgrade, pile and caisson installation, fill placement, field compaction testing, masonry, reinforcing steel, concrete placement, structural steel erection, and pavement construction. Mr. Jakubowski has contributed to publications involving seismic cone penetrometer testing, geophysical shear wave velocity measurements, and slug tests in groundwater monitoring wells.

Selected Projects

Geotechnical Project Manager - Geotechnical Instrumentation Installation, Gloucester County Improvement Authority, Paulsboro Marine Terminal Access Road and Bridge, Borough of Paulsboro and Township of West Deptford, NJ

Mr. Jakubowski served as project manager during the installation of geotechnical instrumentation required to monitor the subsurface conditions during the construction of the embankments for a new access road and bridge between industrial areas in Paulsboro and West Deptford, New Jersey. Services to monitor the consolidation of soft subsurface soils included the review of over 1,000 feet of SPT and auger borings, soil sampling, installation of 12 vertical inclinometers to depths of up to 75 feet and installation of 10 vibrating wire piezometers to depths of up to 45 feet. Mr. Jakubowski assisted in coordinating field staff and subcontractors, locating utilities, evaluating previously performed SPT and CPT borings, preparing reports and providing the initial instrumentation monitoring report.

Geotechnical Project Manager – Dover Air Force Base, Skills Development Center and Car Wash, Dover, DE

The project included the construction of a one-story, steel-framed, Skills Development Center covering an area of 16,800 square feet and Car Wash covering an area of 1,600 square feet. The project site was previously developed and contained several buildings that were demolished prior to the field program of test borings and test pits. Mr. Jakubowski provided coordination of staff and subcontractors for the purpose of performing a field subsurface evaluation that included identification of the previously placed, miscellaneous fill. Responsibilities also included performance of engineering foundation and settlement analyses for the foundation system, design of bituminous concrete and portland cement concrete site pavements utilizing UFC guidelines, and preparation of a geotechnical engineering report that included recommendations for design and construction.

Project Manager – Delaware Welcome Center, Delaware Interstate 95 – Mile Marker 5, Newark, DE 2010

Mr. Jakubowski served as a project manager for the construction review of the new Delaware Welcome Center, designed to be LEED Silver Certified. The project was designed to service 3 million annual visitors, and includes a new 42,000 square-foot main visitor center building along with a 5,700 square-foot fuel facility with 21 pumps, new parking areas, stormwater management areas, and a vertical geothermal well system. Mr. Jakubowski oversaw construction review services for reinforced concrete, foundation subgrade, pavement subgrade, fill placement, structural steel, portland cement and bituminous concrete pavement construction, and geotechnical laboratory testing. The project had an accelerated construction schedule, requiring the management of technicians providing simultaneous review of construction at different portions of the project site and during the night.

Geotechnical Project Manager – Big Fish Bar & Grill Restaurant, Wilmington, DE

Mr. Jakubowski provided coordination of staff and subcontractors for the purpose of performing a field subsurface evaluation for a 9,500 square foot restaurant and adjacent parking areas for the Wilmington Riverfront. Responsibilities also included performance of engineering foundation and settlement analyses for a deep foundation system in soft, compressible soils, preparation of a geotechnical engineering report, review of pile load testing and management of field staff during pile foundation construction and oversaw construction review services for reinforced concrete, fill placement, and structural steel.

Geotechnical Project Engineer – Northbeach Restaurant, Dewey Beach, DE 2008

Mr. Jakubowski provided coordination of staff and subcontractors for the purpose of performing a field subsurface evaluation for the project architect for the proposed renovations to a restaurant structure in a flood-prone area with shallow groundwater conditions. Responsibilities also included performance of engineering foundation and settlement analyses for shallow and deep foundation systems and preparation of a geotechnical engineering report that included design and construction recommendations.



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REFERENCES

...d of technical accomplishments for our many
satisfied clients. We encourage you to contact these individuals.

Bill Reader, Member Cell: (302)569-0316
E-mail: reetstu@yahoo.com

Overfalls Maritime Museum Foundation

Re: Lightship Overfalls Final Port project
7 Delmar Avenue
Lewes, DE 19958

Randy Horne, Port Engineer (302)472-7827
E-mail: rhorne@port.state.de.us

Port of Wilmington

1 Hausel Road
Wilmington, DE 19801

Jerry McCammon Cell: (302)462-1688
E-mail: jerry@marinelubricants.us

Marine Lubricants

Re: Wharf Reconstruction project
1130 East 7th Street
Wilmington, DE 19801



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RELATIONAL INFORMATION

The following section contains profiles of related project experience for Duffield Associates and other members of our proposed project team.

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Courtesy of Cape Gazette



Courtesy of Overfalls Maritime Museum Foundation

LIGHTSHIP OVERFALLS FINAL PORT

Client Overfalls Maritime Museum Foundation
Contact Bill Reader

Services Provided

Geotechnical, Environmental, Marine, Structural, Permitting

Project Description

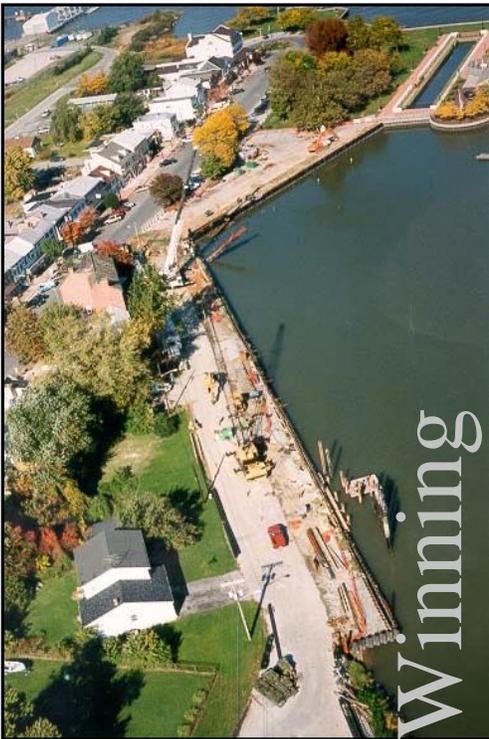
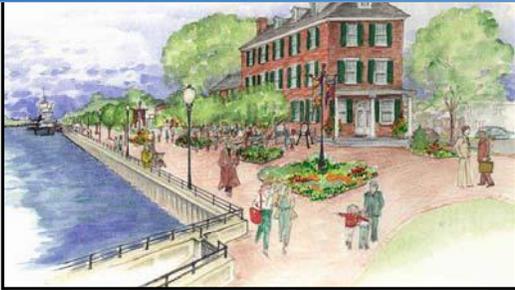
The Lightship Overfalls (LV118) was built in 1938 and is one of 7 survivors of the 179 lightships that marked the U.S. waterways over a 163 year period. Since 1973, the Overfalls has been in its current location along the Lewes and Rehoboth Canal.

In 2001, the non-profit Overfalls Maritime Museum Foundation was formed to purchase the Overfalls from the Lewes Historical Society in order to restore the lightship and to provide tours allowing public access to an important piece of U.S. maritime history. The Foundation members volunteered thousands of grueling hours to restore the aesthetics and some of the functional items of the ship, but limited access, site constraints and site limitations have restricted the Foundation from completing its task.

Duffield Associates was selected to assist the Foundation in completing the restoration of the Lightship by evaluating the site conditions and conceptualizing site configurations to optimize the final port for LV118. Duffield worked with the Foundation in the early stages of the project to evaluate and provide an option that was previously thought to be unfeasible: having the ship repaired off-site at a shipyard and constructing a sheet pile bulkheaded berth to present the Overfalls in a natural setting rather than encasing the hull in concrete or having the ship on land. Duffield Associates provided engineering and consulting services including: geotechnical, environmental, marine, and structural engineering, grant assistance, permit application preparation and assistance, and project drawing and specification preparation.

Projects

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Award-Winning

NEW LIFE FOR HISTORIC WATERFRONT DELAWARE CITY, DELAWARE

Client Delaware City

Challenge

Delaware City, a community rich in maritime history, is situated along the bank of the Delaware River, at the eastern terminus of the original Chesapeake & Delaware Canal. Delaware City had a vision to realize the economic and aesthetic potential of its historic waterfront. The Old Lock, Boat Launch, and Sterling Hotel became the framework for proposed rehabilitation as well as the revitalization of a canal promenade.

Solution

Duffield Associates engineers assisted Delaware City in prioritizing infrastructure needs and helped prepare and obtain grants for funding. Other key project features included improved drainage, brick-paved pedestrian walkways with lighting and benches, and canal overlooks.

Key design elements for this project included:

- During the Canal Promenade design, the United States Army Corps of Engineers (USACE) was preparing to replace a bulkhead adjacent to Delaware City's bulkhead. Coordination initiated by our engineers with the USACE facilitated concurrent design and construction. As a result of this collaboration with the USACE, a cost-effective and visually similar design was developed into both projects that were approved by the Delaware State Historic Preservation Office.
- Traffic-calming techniques were designed into new brick-paved crosswalks to provide safe pedestrian access across the town's Main Street to the newly created park.
- Park improvements were designed as both a bikeway and greenway.
- The entrance to the DNREC boat launch was transformed into a Grand Alley.
- Lighted pedestrian access to the City's adjacent floating docks was designed to meet the City's Architectural Accessibility Board requirements.
- The first phase of a modernized floodwall was constructed atop the new bulkhead to provide 100 year flood protection for the City's historic and commercial districts.

The project was completed on-time and under budget. As a result of the financial investment, Delaware City is experiencing an economic resurgence and an increased interest in renovations to other historic and commercial structures.

This project was awarded the Consulting Engineers Council of Delaware's Conceptor Award for Engineering Excellence.

WIN WIN WALL

DELAWARE CITY, DELAWARE

Client Delaware City

Faced with the threat of severe flooding, Delaware City wanted to protect its residences and businesses near its historic waterfront. Delaware City selected Duffield Associates to design a flood barrier along the Delaware River at historic Battery Park to protect against the 100-year flood. To fund the project, our engineers assisted Delaware City in obtaining grant money from the Federal Emergency Management Agency for the cost of constructing a concrete flood retaining wall.

An early concept design included a decorative cast concrete flood barrier that would have raised the existing park wall as much as 2 feet in some areas. At early public involvement meetings, area business owners were concerned that the higher wall could obstruct water views.

Working with City and Federal officials, we proposed an innovative solution that would not only provide the needed flood protection but would also allow views of the Delaware River. The design included a lower flood wall with removable fiberglass panels that could be installed during the threat of flooding so that Delaware City residents would be protected but, during normal conditions, could be removed thus retaining the open waterfront feel. Integrating the panels with the supporting frame/railing and base concrete structure, particularly with the requirement that the panel form a water tight seal with the frame, while simultaneously providing an aesthetically pleasing shape, was an engineering challenge.

This system of removable flood panels, supported by an aesthetic mix of steel posts and railing and strategically placed concrete parapets, was designed to withstand the hydrostatic and hydrodynamic forces caused by a 100-year flood. The removable flood panels are constructed of Fiber Reinforced Plastic (FRP) weighing less than 75 pounds each, allowing them to be easily and rapidly installed during flood threats. The panels are designed to slide into place between steel posts which are anchored to the top of an existing concrete cap.

Under normal conditions, the flood panels are removed and stored.

This win-win solution which employs an innovative material in a non-traditional use protects this historic community and its economy while preserving the aesthetics of its historic waterfront.

Our participation in this project won the Grand Conceptor Award from the Delaware Council of Engineering Companies.



Award-Winning

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LUMBERYARD NO LONGER HAMMERED BY FLOODING: WHITE CLAY CREEK FLOODPLAIN/FLOODWAY EVALUATION AND MITIGATION NEW CASTLE COUNTY, DELAWARE

Client: S&E Associates
Contact: William Shone, Jr. (302) 998-3357

Services Provided

Water resources engineering and analysis; flood-proofing design, construction review services

Project Description

The Shone Lumber property is situated in a flood prone area along White Clay Creek in Stanton, just downstream of its confluence with Red Clay Creek. The property has been subjected to repeated flooding and the owner worked with local agencies to obtain a FEMA grant to floodproof the showroom building. Flood height estimation at the site is complex due to flooding from both the White Clay Creek and an Amtrak railroad underpass adjacent to the site.

Using HEC-RAS models of White Clay Creek and analysis of ancillary flooding sources completed for prior projects, as well as analysis of high water mark data, Duffield Associates worked with Shone Lumber to establish a target flood-proofing height that balanced construction cost and flood risk. Additionally, Duffield Associates obtained a New Castle County floodplain development permit for the project.

Once Duffield Associates had helped the owner evaluate the costs and benefits of flood protection, in consultation with the New Castle Conservation District, Duffield Associates designed highly customized flood protection for the owner's expansive showroom. Flood protection improvements consisted of reinforced masonry and concrete floodwalls and a variety of floodgates, including easy-to-deploy hinged gates and large, single-panel gates for many overhead doors. In addition, in association with the flood protection improvements, Duffield Associates designed enhancements to the main entrance and the receiving area, plus many modifications that cleaned up the perimeter of the facility, which had been constructed and altered over many years.

Following the design stage, Duffield Associates provided full-phase construction review services and performed testing required by the county. Almost immediately after the flood-proofing construction was completed, a major flood occurred which previously would have flooded the building causing extensive damage. Because of the flood-proofing measures, the building remained dry with no damage and no interruption to Shone's business.

This project won the American Society of Civil Engineers Delaware Chapter Small Project award and the Governor's Urban Conservation Award for New Castle County.

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MULTIPURPOSE DOCK ON THE DELAWARE RIVER PORT OF WILMINGTON, DELAWARE



Owner Diamond State Port Corporation

Services Provided

Geotechnical, environmental, permitting, design, and construction review services for new dock causeway and berth.

Project Description

Duffield Associates, Inc. (DAI) was initially retained by the Diamond State Port Corporation (DSPC) to complete a feasibility study for its first new dock and berth on the Delaware River. The study involved: bathymetric surveys; subsurface exploration, including land and water-based borings and soil/environmental sampling to address both geotechnical and environmental issues; location and configuration of the proposed berth, including performing sediment transport analyses to determine initial and maintenance dredging requirements; evaluation of dredging material disposal options/sites; preliminary design of site roadways, access causeways, and dock structure; identification of submerged cultural resources and other environmental permitting issues, including wetland area identification and mitigation; regulatory agency liaison; and preparation of a preliminary construction cost estimate.

In conjunction with another engineering firm, a final design was developed to include an 875-foot long pile-supported dock. The location and orientation/configuration of the berth were developed to eliminate initial and long-term maintenance dredging which would have taxed the already capacity-challenged Wilmington Harbor.

Design services provided by Duffield Associates included technical design of pile foundations to support the berth and trestle, which traversed a Corps of Engineers containment dike, a 10 ft soil surcharge to pre-consolidate a 17 acre paved parking lot over a former dredge disposal area, analysis and design for relocation of several earthen containment dikes over soft recently placed dredged materials and pavement design over the unconsolidated dredged materials, existing dikes and fast lands. Duffield Associates was subsequently retained for construction review of Access Road and berth construction. Services included: review of the test pile program (including review of splice welds, axial load, and pile dynamic testing); production piles including splice welds; bitumastic coating for production piles; earthwork; and concrete activities.

Since completion of the initial construction in 2002, Duffield Associates has been retained by the DSPC and DSPC's engineers and contractors to provide additional design and construction review services related to the 17-acre paved parking lot and a new mooring dolphin located downstream of the berth. Duffield Associates's services included:

- Design and construction review of a wearing surface for the 17-acre lot to allow for the storage of bulk materials;
- Performance of a desktop geotechnical evaluation for the new mooring dolphin utilizing water-based borings previously performed by Duffield Associates;
- Assisting DSPC's structural engineer with the development of technical specifications for the pile supported mooring dolphin and access catwalk; and Developing driving criteria and reviewing construction of the piling (which included pile dynamic testing) for the mooring dolphin and catwalk; as well as reviewing reinforcing steel and concrete placement for the mooring dolphin.

Projects

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EMA GRANT APPLICATION PREPARATION



The News Journal

Client
Contact

New Castle County
Michael Harmer, P.E., 302-395-5845

Services Provided

Application preparation, coordination with FEMA, benefit cost assessments, project flood mitigation alternatives, identified/surveyed high water marks, wetlands assessments, environmental screens, geomorphological channel assessments, HEC-RAS modeling, flood plain mapping

Project Description

Homes, businesses and industry in New Castle County were repeatedly damaged by flooding of the Red Clay and White Clay Creeks. The most severe flooding was caused by precipitation from tropical storm systems Floyd (September 1999), Henri (September 2003), and Jeanne (September 2004). These floods had approximate probabilistic recurrence intervals of 432 years, 108 years and 127 years, respectively, based on an analysis of stream gage data.

Working with the State and Federal governments, Duffield Associates helped assess the damage to homes in the more severely impacted communities, some of which were determined to be uninhabitable. As a result, the County, in cooperation with the State of Delaware (DEMA, DNREC and DeIDOT), wished to obtain FEMA grant money to either buyout affected homes or perform flood mitigation measures. Duffield Associates prepared Federal Emergency Management Agency (FEMA) grant applications for three of these sites including:

- Eight homes in Newkirk Estates adjacent to the White Clay Creek;
- Removal of two dams along the Red Clay Creek in the Yorklyn area; and
- 77 homes in Glenville Estates adjacent to the Red Clay Creek in Stanton at the confluence with the White Clay Creek.

As a result, FEMA awarded the County several grants including:

- HMGP grant for three homes in Newkirk Estates;
- PDMC grant for five homes in Newkirk Estates (one of 758 competitive applications);
- FMA grant for 9 homes in Glenville Estates;
- FMA grant for 8 homes in Glenville Estates.

In addition, New Castle County engaged Duffield Associates to develop flood mitigation or abatement design concepts that would prevent or lessen flooding impacts to the remaining homes, businesses and industry. The design utilized purchased properties to beneficially control stormwater or improve flooding conditions along Red Clay Creek and White Clay Creek

Projects



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REQUIRED INFORMATION